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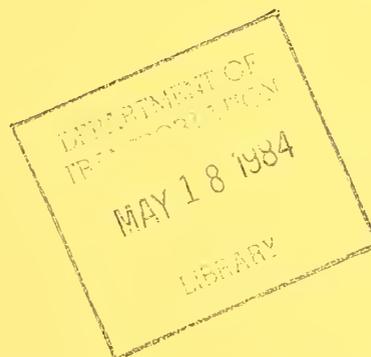


U.S. Department
of Transportation
**Urban Mass
Transportation
Administration**

UMTA-MA-06-0049-83-5
DOT-TSC-UMTA-83-48

Proceedings of the 1981 Work- Shop on Rural Transportation on Indian Reservations, with Bibliography

**Final Report
November 1983**



**UMTA Technical Assistance Program
Office of Service and Management Demonstration
UMTA/TSC Project Evaluation Series**

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no. DOT-TSC-UMTA-
83-48

1. Report No. UMTA-MA-06-0049-83-5		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ✓ PROCEEDINGS OF THE 1981 WORKSHOP ON RURAL TRANSPORTATION ON INDIAN RESERVATIONS, WITH BIBLIOGRAPHY				5. Report Date November 1983	
				6. Performing Organization Code DTS-64	
7. Author(s) John Crain				8. Performing Organization Report No. DOT-TSC-UMTA-83-48	
9. Performing Organization Name and Address Crain & Associates, Inc.* 120 Santa Margarita Menlo Park CA 94025				10. Work Unit No. (TRAIS) UM427/R4620	
				11. Contract or Grant No. DOT-TSC-1755	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Urban Mass Transportation Administration Office of Technical Assistance Washington DC 20590				13. Type of Report and Period Covered Final Report August 1981 - September 1981	
				14. Sponsoring Agency Code URT-30	
15. Supplementary Notes U.S. Department of Transportation Research and Special Programs Administration *Under Contract to: Transportation Systems Center Cambridge MA 02142					
16. Abstract This is a final report on the proceedings of the Workshop on Rural Transportation on Indian Reservations. The workshop was held on August 17, 1981 as an adjunct to the Fifth National Conference on Rural Public Transportation. The purpose of the workshop was to bring together representatives of Indian tribes and Government agencies with an interest in rural public transportation programs on Indian reservations. Its objectives were: 1) to solidify the knowledge gained through Section 147 and other Federal and state experiences; and 2) to plan for continuing the momentum of accomplishment into the future despite reduction of Federal support. The workshop was quite successful in pursuing these objectives. A program of presentations and case studies was followed by focus groups to discuss selected issues and a final summary session with reports from the focus groups and an open discussion. The report contains, as appendices, two bibliographies of rural transportation reports and related references prepared by state and Federal agencies.					
17. Key Words Rural Public Transportation Transportation Disadvantaged			18. Distribution Statement DOCUMENT IS AVAILABLE THROUGH SUPERINTENDENT OF DOCUMENTS U.S. GOVERNMENT PRINTING OFFICE WASHINGTON DC 20402		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 66	22. Price

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PREFACE

This report on the Proceedings of the 1981 Workshop on Rural Transportation on Indian Reservations was funded by the Transportation Systems Center of the U.S. Department of Transportation through its program of evaluation of the Urban Mass Transportation Administration-sponsored Service and Management Demonstration Program.

I would like to thank Lynn Sajah of UMTA, Joseph S. Revis of Crain-Revis Associates, Inc., and Peter M. Schauer of Peter Schauer Associates for their help in preparing this report.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol When You Know Multiply by To Find Symbol

LENGTH

in	inches	2.5	cm	centimeters
ft	feet	30	cm	centimeters
yd	yards	0.9	m	meters
mi	miles	1.6	km	kilometers

AREA

sq ft	square inches	6.5	sq cm	square centimeters
sq ft	square feet	0.09	m ²	square meters
sq yd	square yards	0.8	m ²	square meters
sq mi	square miles	2.6	km ²	square kilometers
acres	acres	0.4	ha	hectares

MASS (weight)

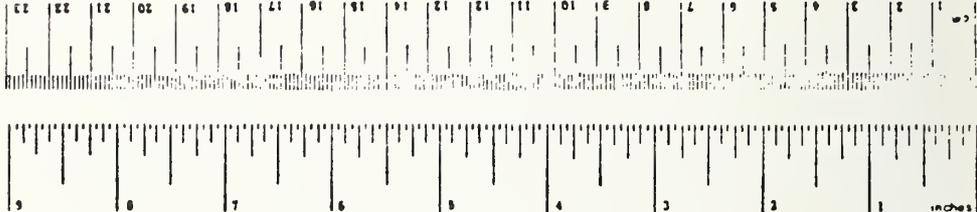
oz	ounces	28	g	grams
lb	pounds	0.45	kg	kilograms
	short tons	0.9	t	tonnes
	17000 lb			

VOLUME

teaspoon	teaspoons	5	ml	milliliters
tablespoon	tablespoons	15	ml	milliliters
fluid ounce	fluid ounces	30	ml	milliliters
c	cups	0.24	l	liters
pt	pints	0.47	l	liters
qt	quarts	0.95	l	liters
gal	gallons	3.8	m ³	cubic meters
cu ft	cubic feet	0.03	m ³	cubic meters
yd ³	cubic yards	0.76	m ³	cubic meters

TEMPERATURE (exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	°C	Celsius temperature
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Approximate Conversions from Metric Measures

Symbol When You Know Multiply by To Find Symbol

LENGTH

mm	millimeters	0.04	in	inches
cm	centimeters	0.4	in	inches
m	meters	3.3	ft	feet
km	kilometers	0.6	mi	miles

AREA

sq cm	square centimeters	0.16	sq in	square inches
m ²	square meters	1.2	sq yd	square yards
km ²	square kilometers	0.4	sq mi	square miles
ha	hectares (10,000 m ²)	2.5	acres	acres

MASS (weight)

g	grams	0.035	oz	ounces
kg	kilograms	2.2	lb	pounds
t	tonnes (1000 kg)	1.1	short tons	short tons

VOLUME

ml	milliliters	0.03	fl oz	fluid ounces
l	liters	1.06	qt	quarts
m ³	cubic meters	0.26	gal	gallons
m ³	cubic meters	35	cu ft	cubic feet
m ³	cubic meters	1.3	yd ³	cubic yards

TEMPERATURE (approx)

°C	Celsius temperature	9/5 (then add 32)	°F	Fahrenheit temperature
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PROCEEDINGS OF THE WORKSHOP

FOREWORD

Since the late 1960s and early 1970s the U.S. Department of Transportation has taken an increasing interest in the transportation problems of Indian communities on reservations throughout the United States. This interest was further accelerated by the advent of the Rural Transportation Demonstration Program, the so-called "Section 147 Program"¹, conducted mainly in 1976 to 1978, in which transportation projects were sponsored on 11 Indian reservations. The Section 147 Program was managed by the Federal Highway Administration (FHWA) with the technical support of the Urban Mass Transportation Administration (UMTA). Earlier and concurrent with the Section 147 Program, UMTA had sponsored major demonstrations on the Fort Berthold Reservation in western North Dakota and on the Navajo Nation located near the Four Points region of Arizona, New Mexico, Colorado and Utah.

The Section 147 Indian projects were summarized in a major 1980 U.S. DOT report (reference 28, Appendix B) which described the types of transportation problems existing on reservations, the approaches people were taking to solve these problems, and some of the effective and ineffective solutions that are in practice.

The Section 147 demonstration program was designed as a possible forerunner to the Section 18² program that was to give continuing support to rural transportation programs. It was anticipated that various Indian tribes, including those participating in the Section 147 program, would apply for the Section 18 funds, and they did.

¹The Section 147 program was authorized by Section 147 of the Federal Highway Act of 1973.

²The Section 18 program was authorized by Section 18 of the Urban Mass Transportation Act of 1964, as amended.

However, this Federal-tribal relationship in transportation was to be short lived as the Section 18 program funding was severely reduced during the Federal budget cutting of the 1981-82 period.

On August 18-20, 1981 the Fifth National Conference on Rural Public Transportation was held at Humboldt State University in Arcata, California. As an adjunct to that conference a workshop was held on August 17, titled Workshop on Rural Transportation on Indian Reservations. The purpose was to bring together representatives of various Indian tribes and government agencies who had interest in and experience with Indian reservation rural public transportation programs. Out of this gathering was to come 1) a solidification of knowledge gained through the Section 147 and other federal and state experiences, and 2) plans for continuing the momentum of accomplishment into the future, even with the reduction in the main Federal support (Section 18) program.

The workshop was quite successful in pursuing these objectives. At the next meeting of the Rural Transportation Committee, at the 1982 Transportation Research Board Annual Conference, it was decided that the workshop should be documented and used as a base for major 1982 U.S. DOT research output on the subject of Indian transportation. No such major report had been produced since the 1980 report of the 11 Section 147 Indian projects. The proceedings were to be accompanied by annotated bibliographies of research and planning projects that are particularly relevant to transportation planning and operating groups on reservations (see Appendices A and B).

Preparation of this report was funded by the Transportation Systems Center (TSC) of the U.S. DOT through its program of evaluation of UMTA-sponsored Service and Methods Demonstration Programs. TSC had earlier funded its evaluation contractor, Crain & Associates, to assist in planning the workshop and continued its support by requesting that Crain & Associates prepare the proceedings and bibliography report.

PROGRAM

The workshop program preceded the conference with a program of technical presentations on specific transportation projects on Indian reservations. These presentations were intended to bring all workshop participants to a relatively common level of understanding about issues, programs and services. The workshop moderator collected requests on topics for further discussion, and organized focus groups to discuss these topics. The workshop participants then met in an evening plenary session to review the focus groups' results and summarize the workshop findings. This plan was, in the main, quite successful. The program for the workshop is reproduced in Figure 1.

PRESENTATIONS

OPENING SESSION - LYNN SAHAJ, UMTA

Background

Ms. Sahaj presented background leading to the workshop and reviewed the Federal, state and local (tribal level) programming in rural public transportation. A summary of this background material prepared by Ms. Sahaj was used as the forward to this report and will not be repeated here. She cited specific data on details of Indian involvement in various U.S. DOT programs.

Two major UMTA demonstration grants, authorized by Section 6 of the Urban Mass Transportation Act, were awarded to the Fort Berthold Reservation and to the Navajo Nation. The first sponsored the development and operating cost for a 500-route-mile reservation-wide bus service; the second covered the purchase cost of full-sized transit buses for a 1500-route-mile, 12-bus reservation-wide system.

FIGURE 1
WORKSHOP ON RURAL TRANSPORTATION ON INDIAN RESERVATIONS
August 17, 1981

- 9:00 AM Opening Session: Background, Objectives, Workshop Plan, Introduction of Participants, Technical Keynote Speech. Lynn Sahaj, UMTA, Workshop Moderator
- 10:00 AM Section 147 Indian Project Results--Tools for Planning. John Crain, Crain & Associates, Inc. Menlo Park, CA
- 10:45 AM Case Study #1: The Navajo Nation Transportation System. Keith Begay, Navajo Nation, Navajo Transit System
- 11:30 AM Case Study #2: Fort Peck Reservation Transportation Project. Pat Saindon, State of Montana DOT
- 12:15 PM Lunch
- 1:30 PM Case Study #3: Marketing and Service Planning, Rural Public Transportation. Peter Schauer, Peter Schauer Associates, Boonville, MO
- 2:15 PM Case Study #4: Transportation Planning on the Lac Courte Oreilles Indian Reservation. Joseph S. Revis, Crain-Revis Associates, Washington, DC
- 3:00 PM Focus Groups: Selected Issues
1. Management and Technical Assistance
 2. Planning and Implementation
 3. Marketing and Developing Ridership
 4. Funding
- 7:30 PM Evening Plenary Session, Lynn Sahaj, UMTA
1. Reports from Discussion Groups
 2. Workshop Summary: What Have We Learned?
 3. Open Discussion
- 9:00 PM Adjourn

There were 11 Section 147 rural public transportation projects on Indian reservations (discussed in detail below). Nineteen tribes have received Section 18 sustaining grants. Five other tribes have received Section 18 planning assistance grants. Sixteen additional tribes have expressed interest in receiving Section 18 funds. Forty-one Indian organizations have received Section 16(b)(2) grants for purchase of vehicles. Eight other requests have been held up pending further investigation of the private non-profit status of the grantee, a condition required to receive 16(b)(2) funds.

The activities detailed by Ms. Sahaj took place in 21 states. There are federally-recognized Indian groups in 27 states, with 266 tribes in the lower 48 United States. The U.S. 1970 census counted 827,000 persons who identify themselves as Indian, of whom 543,000 live on reservations.

The U.S. DOT programs cited above do not include the funds spent for transportation by other Federal and state agencies or by tribal organizations using their own funds.

Workshop Purposes

Ms. Sahaj emphasized that an impressive start has been made over the last decade in initiating and improving public transportation on reservations. Momentum has been created; a body of knowledge has been accumulated. Through the Section 18 program there is emerging a new relationship between tribal and state government officials who are being newly introduced to Indian groups and Indian problems. However, there is still a need to solidify the progress of recent years and to expand the numbers of individuals and organizations involved in Indian transportation development. This solidification of gains and expansion of base was the purpose of this workshop.

Closure

Lynn Sahaj then reviewed the plan of the workshop (as discussed above) and introduced all the workshop participants. A list of all participants is included at the end of these proceedings.

TECHNICAL KEYNOTE SPEECH - JOHN CRAIN, CRAIN & ASSOCIATES, INC.

John Crain presented the results of a study performed by Crain & Associates as evaluation contractor to the Urban Mass Transportation Administration's Service & Methods Demonstration Program.

Background

Section 147 of the Federal Aid Highway Act of 1973, as amended, authorized a rural highway public transportation demonstration program to be administered by the Federal Highway Administration (FHWA) and the Urban Mass Transportation Administration (UMTA). There were 102 demonstration; 11 were performed by Indian tribal organizations on Indian reservations.

Transportation Services Demonstrated

Indian tribes and reservations differ greatly in character, but they experience a common set of transportation needs. Each of these needs was successfully met in one or more of the projects. Mr. Crain described several such needs and the solutions that were demonstrated. No impediments are known which would present transference of successful concepts from one site to another.

People who live on Indian reservations, like others who live in rural areas, need transportation from their homes in outlying areas to employment centers in reservation towns. Two solutions to this problem were demonstrated: vanpools were operated with driver or employer responsible for vanpool and vehicle management; and

buses were routed to riders' homes and scheduled to meet work shifts. Bus drivers managed the vehicles and worked only when necessary for bus runs.

To meet the need for transportation to health and welfare services provided on or near reservations, single-purpose programs such as health services and senior centers operated buses, usually driven by an employee of that program, with door-to-door service for the programs' clients. Transportation to nearby towns for major shopping or personal business was provided by fixed-schedule fixed-route bus service operating one to three times per week. Transportation within the reservations, usually from the outlying countryside into the central town, was provided by a three-runs-a-day fixed-route, fixed-schedule bus service which could also serve work trips. Other travelers could go to town on one run and time their business to return on the next. Drivers would know who would be returning and look for them. Transport of groups of people to locations of major events was provided by a large bus that was controlled by a representative of the tribal council.

Tribes and reservations also have common transit management problems. Mr. Crain enumerated the major difficulties that frustrated viable operation of the demonstration projects: 1) lack of skills and supportive training; 2) low density setting and scattered demand; 3) no existing institutions within which to establish the transit function; 4) insufficient maintenance support systems; 5) essentially no base of knowledge on how to plan and operate public transportation; and 6) lack of coordination between elements within the tribe. Impressive solutions to these problems were developed by individual projects. These may also be transferable.

Although demand for public transit is small in these low-density rural settings, the needs for transportation are real and urgent. The communities are supportive of the concept of transit and willing to work for its continuation. Although reservation

communities have a critical lack of the resources needed to develop public transportation, the problems appear to be solvable through carefully directed technical assistance and, possibly, demonstration testing.

Several attractive service innovations appear worthy of testing. These include the half dozen successful service concepts developed in the Section 147 program. These could be the basis for further demonstrations. Other testable innovations are multi-purpose school bus systems and transit stamp (hitchhiker) concepts.

Findings

Mr. Crain then discussed some noteworthy findings from these projects. For example, multi-purpose fixed-route bus lines proved excessively costly. However, a variety of single-purpose busing functions which met urgent needs were very cost effective.

The wheelchair lifts that were mounted on most buses were neither needed nor used. There was no effective coordination between different agencies using the same service, although buses were effectively used in off hours for recreational and social purposes. Costs per passenger mile varied among projects from 7¢ to over \$1. About one third of the grant monies passed through the reservation economy without being respent; two thirds went to members of the reservation community. Finally, the Section 147 data collection and analysis process was essentially unusable in most projects.

Implications for Federal Programming

Finally, John Crain offered the following ideas for consideration of their implication for Federal programming. 1) Most of the tribal councils believe channeling Section 18 funds through state governments will produce inequities between Indian groups and other local jurisdictions. 2) Use of CETA funds to support transportation projects has been ineffective because it produces too

much employee turnover. 3) The seed money orientation of most categorical grant programs is unrealistic for Indian reservation societies because of the absence of sufficient economic base. 4) The categorical grant program, which emphasizes the pursuit of Federal funds for specified purposes, appears counter productive to the principles of self-determination.

CASE STUDIES

CASE STUDY #1: THE NAVAJO NATION TRANSPORTATION SYSTEM. KEITH BEGAY, MANAGER, NAVAJO TRANSPORTATION SYSTEM

The Navajo Nation covers some 20,000 square miles--an area about the size of New Jersey--in Utah, Arizona and New Mexico. It contains eight major towns connected by well paved rural roads. Principal villages are connected to the paved inter-town road system by unpaved back roads. The tribal government, located mainly in Window Rock, Arizona, includes an extensive governmental organization staffed in most cases by trained Navajo personnel. The tribe has a growing financial base founded on mineral resources, but it continues to experience problems of poverty and under-educated and undertrained citizenry.

The current Navajo public transportation bus system was started in 1980 using an UMTA grant to purchase the bus fleet. Twelve full-size transit-type buses were purchased and deployed. Service is provided through a fixed-route, fixed-schedule bus system running on the paved roads and interconnecting the major town. It is the largest, best financed, most successful Indian community bus system in the U.S. (editor's comment).

Mr. Begay outlined the 10 largest problems he confronts in completing the development of the Navajo bus system. He brought

laughter by listing the problems because they represented a microcosm of all the problems besetting the U.S. transit industry. The problem areas were:

Funding. Coordinating a multiplicity of funding sources, including four state governments, is a challenge. Besides the four-state grant coordination problem (each state requires separate bookkeeping), emphasis is currently placed on providing transit service that supports the social service programs.

Long distance routes. The long distances involved--some routes over 200 miles--produce major problems in service coordination, schedule reliability, equipment breakdown and so forth.

Road maintenance. Problems of reduced road funding and inflation are causing deterioration of pavement that will take its toll on vehicle depreciation and maintenance costs. Vehicles are maintained by the Federal Transportation Department at Window Rock.

Low ridership. The population density is less than 6.5 persons per square mile. Many people live well off the main roads and have formidable problems of access to the system.

Red tape within the reservation. The Navajo government has a large administrative organization with all the usual bureaucratic problems of conflicting departmental objectives, disagreements over responsibilities, and procedures inhibiting flexibility.

Driver instability and high turnover. The system operates by using CETA funding for driver salaries which, because CETA funds training but not permanent employment, produces problems of low wages and high turnover.

Parts replacement. The transit-type buses use parts not in stock at nearby locations. They must be ordered long distance with prolonged delivery times.

Inadequate maintenance facility. The present facility is over-taxed with the many other tribal-owned vehicles. It was not designed for the special needs of transit vehicles. The tribe is considering building a new facility designed to accommodate current and projected needs.

Management problems. Mr. Begay is a graduate engineer with considerable background in public administration, but he has no background in transit operations. He has no staff with any training in any directly related fields.

Marketing. The tribal transit system is not a household (or, better, a "hoganhold") word. How to inform people in the remote villages about the system and to get them into the habit of using it is a major problem.

There is also a major problem in developing a concensus on the system's benefits and how to employ the surplus of unemployed labor to provide this obviously valuable new service.

CASE STUDY #2: FORT PECK RESERVATION. PATRICIA SAINDON,
MONTANA DOT

The Fort Peck public transportation system, funded as a Section 147 demonstration system, began operating in February 1975 after considerable delay and false starts. It serves the 5,000-person, 1500-square-mile Fort Peck reservation in northeastern Montana. The three major reservation towns and most of the population are located along U.S. 2 allowing easy line haul transport. Two buses provide fixed-route service from neighboring small towns to Poplar, the employment center and tribal headquarters. One bus operates as a commuter bus pool going to a manufacturing plant where the driver works. The other has a full-time driver who makes two round trips bringing workers, shoppers, and social service clients to town and home.

The system has experienced considerable management and operational problems. The first project manager resigned. The second is providing excellent project supervision but has no management support from the tribal administration. There has been difficulty obtaining appropriate insurance. The project has been operating on a binder policy with inadequate coverage because the insurance

policy deemed necessary was very expensive. Low wages for bus drivers have made these jobs somewhat unattractive.

Ms. Saindon noted that the State of Montana considers the Fort Peck project to be highly successful notwithstanding a long and difficult developmental period. A considerable effort was expended by the State DOT staff in working with tribal project representatives to develop operational plans, staffing, and data collection and reporting procedures.

Ms. Saindon emphasized the need for the funding agency to allocate a large and continuing effort to working closely with project personnel. This coordination must take place through personal, face-to-face contact involving many meetings. She believes this is the primary ingredient for a successful program when one is working with a tribal group that is relatively untrained in rural public transportation system development.

CASE STUDY #3: MARKETING AND SERVICE PLANNING.* PETER M. SCHAUER,
PETER SCHAUER ASSOCIATES, MO

Peter Schauer presented the basic elements of marketing and techniques for implementing a marketing program applicable to tribal transportation programs. He emphasized that the basic principles of marketing are the same for manufacturers, service industries, government agencies, and Indian tribes. The emphasis in tribal transportation is on service delivery and having a complete marketing program that is compatible with tribal goals and objectives.

He noted that more transportation managers and planners think only of advertising when marketing is discussed. However, at the minimum when considering transportation services, marketing consists of pricing, service development and planning, market research, customer services, public relations, and advertising.

*This summary was prepared after the conference by Mr. Schauer. The portion on transportation service planning was reviewed by Jerry Wankan, Program Coordinator, and Joe Reed, Tribal Manager, both members of the Menominee Tribe and of the tribal staff.

Peter Schauer noted how pervasive a marketing approach to transportation services can be. Even selection of equipment and seating arrangements should be based on a marketing approach. He observed that perhaps for senior citizens perimeter seating would be acceptable because it tends to encourage visiting. But with the general public where people just want to ride the bus, forward facing seats are often the best selection. Many examples were presented to emphasize Mr. Schauer's belief that marketing affects just about every aspect of a transportation program and deserves more attention by transportation planners and managers.

In discussing transportation planning on Indian reservations, Mr. Schauer noted that planning is often fruitful only if the planners are aware of the unique nature of reservations as nations unto themselves. Typically the transportation planner attempts to first establish some demand estimate and need analysis for a given area and then design services to meet the need and demand. On reservations it is necessary to determine need and demand, but it is also imperative to accurately delineate tribal goals and make certain that the transportation service is compatible with tribal goals. Transportation in the context of overall tribal goals and aspirations is perhaps the only functional approach for service planning. That is, transportation is not an isolated activity but the conduit by which other activities are facilitated. In this way transportation services can enhance or detract from other activities and overall tribal goals. An example of this is a situation where a tribe is striving to expand the economic base by establishing businesses on the reservation. Transportation services that make it easier for persons to leave the reservation to support off-reservation services (assuming on- and off-reservation businesses are equal) hence would not be looked upon with favor by tribal leadership.

This approach to transportation planning may be no different than the ideal process that should be followed in any planning

area. However the successful reservation planner will strive to discard a technocratic approach and seek to emphasize the planning process and community involvement. In this way the reservation planner finds himself or herself moving away from the "zero bias" bent supposedly held by enlightened planners and moves in the direction of an advocate. As advocates, reservation planners can only be effective if they articulate and facilitate overall tribal goals.

Appendix C to this proceedings report is included to provide an example of this goals-based approach to service planning. The appendix is a copy of Chapter 5 of reference 18 of the Appendix A bibliography. It presents a methodology for assessing tribal goals through focused interviews and a methodology for determining internal goal consistency and compatibility.

CASE STUDY #4: TRANSPORTATION PLANNING ON THE LAC COURTE OREILLES RESERVATION, WISCONSIN. JOSEPH S. REVIS, CRAIN-REVIS ASSOCIATES, WASHINGTON, DC

Joseph Revis described a feasibility study conducted by Crain-Revis Associates of the public transportation alternatives available to serve the Lac Courte Oreilles (LCO) Indian Reservation. A review of population, employment, socioeconomic and travel data was performed. Specific goals and objectives relating to transportation were identified by the LCO Transportation Advisory Council and the tribal council. Finally, a range of public transportation alternatives to serve the unmet transportation needs of LCO reservation residents was identified and evaluated, and conclusions and recommendations were made.

Three surveys were performed to gather data from social service agencies and related institutions, transportation providers and households. The Lac Courte Oreilles Reservation covers over 108 square miles and has a population of approximately 1554 persons.

An additional 257 persons live adjacent to the reservation. Unemployment on the reservation is approximately 66% and is considered the reservation's most serious problem.

Mobility of reservation residents is quite high. Car and truck ownership is widespread, averaging 1.6 vehicles per household. Hitchhiking and walking are important mode choices, especially for the young. A considerable network of transportation services currently operates on the reservation. Nine vans, one bus, and seven to ten private cars serve human service agency requirements and related programs.

Mr. Revis reported that analysis of survey data revealed three broad categories of unmet transportation needs: intrareservation trips, trips to Hayward (the nearest town outside the reservation) and trips to more distant and dispersed locations. Four types of unmet intrareservation trip needs were identified: trips from one LCO activity center (e.g., health center, school, day care) to another; personal visits; recreation activities; and access to service facilities.

After considerable discussion of target populations to be served, service objectives, and trip purposes, the tribal council and transportation advisory committee developed the following priorities as the basis for system design:

- Service objectives
 1. The proposed systems should provide a circulation system serving intrareservation destinations with access to Hayward.
 2. Three major service characteristics should be tested and evaluated: bus shuttle with fixed route, scheduled service and designated stops; a dial-a-ride or shared-ride system; conventional taxi service.
 3. Service alternatives should operate on a fare basis. Evaluation should consider the deficit implications of various fare levels.

- Target population priorities
 1. Elderly
 2. Youth under 18 years of age
 3. Housewives and other carless, and unemployed persons
 4. Employed population
- Trip purpose priorities
 1. Shopping
 2. Recreation
 3. Job search and access
 4. Work

Mr. Revis explained that the high ranking of shopping and recreation is consistent with the ranking of the elderly and youth, for whom these are major interests and activities. Also, these rankings are only relative since any particular service design would serve more than one target group and purpose.

Data obtained from the household survey were used to prepare estimates of potential demand for public transportation for three groups: the age group 5-18, the non-working, and the employed. In view of the high level of car ownership and trip assistance already offered, the potential share of present trips that might be shifted to public transit is not forecast to be substantial. Potential one-way transit trips are estimated to be approximately 3200 trips with the age group 5-18 accounting for 77% of the total, the non-working population 19%, and the employed 4%.

Eight preliminary alternatives were identified for consideration. Then four alternatives were selected for detailed evaluation. These were a transportation coordination center, a shuttle bus service operating on fixed routes and scheduled runs, a taxi service operating on a non-shared ride basis, and a taxi service operating on a shared-ride basis (with many characteristics of a dial-a-ride

operation). For these four alternatives, comparisons were made of the cost of operation, the number of miles traveled by the vehicles under each of the alternatives, an appraisal of the fares and revenue requirements to break even on both a "full costs" and "cash" basis.

Mr. Revis noted that in making recommendations for selecting an alternative, it is not simply a question of identifying the lowest cost option. There are important differences in the quality and quantity of service provided by each of the alternatives that must be considered. An initial decision needed to be made as to what level of service was needed and at what fare such service was to be provided. If primary emphasis was to be placed on the young and elderly populations, then one-way fare levels in the range of \$4.25 were unreasonable. The demand for service at that level would likely be very low. If service was to be provided at about \$1.50 per one-way trip, the outcome in terms of utilization would be quite different. But, of course, so would the level of operating deficit differ.

Joseph Revis reported that the following recommendations were made:

1. Implementation of a LCO transportation coordination center should be undertaken as soon as possible. This would provide more effective use of the present transportation system through increased load factors by taking advantage of present trip patterns. For example, an LCO resident could call in to the coordination center and, when any of the vans was making a trip and had available seats, arrangements could be made to pick up the resident without the vehicle having to increase mileage substantially.
2. Transportation service provided in the future should be based on the reduced service and use forecasts estimated for a one-vehicle shuttle bus calculated on a cash basis. This would require an average one-way fare of 80¢ to \$1.20. Inclusion of the connection to Hayward was recommended.

Finally, Mr. Revis stressed the importance of maintaining close monitoring so that, in the event of a major demand shortfall, a response could be developed.

FOCUS GROUPS

MANAGEMENT AND TECHNICAL ASSISTANCE. CHAIRED BY JOHN CRAIN AND PATRICIA SAINDON; GROUP RECORDER DOROTHY O'DELL, CALTRANS

The following issues and suggested solutions were discussed:

Issue: Lack of trained managers, drivers and other operator staff

Solutions:

1. Identify a list of experienced operators who are willing to serve as resource people and provide advice and training.
2. Develop a greater degree of communication between operators.
3. Some states are forming associations of transit operators, although this formation may create barriers between large and small operators.
4. Perhaps a state can create a circuit rider-trouble shooter to travel and provide assistance to Section 18 applicants.

Issue: Extreme workload for state employees who provide assistance in preparing and processing Section 18 applications

Solution: After an initial telephone contact, plan to spend one to two days in a face-to-face session with applicants early in the application process. This will help eliminate a great number of time consuming problems later on in the process.

Issue: Turnover of applicants' staff which results in constant training of contact persons in operators' staffs.

Solution: Identify those operators who are suffering high turnover due to low salary scale. Make sure these operators know about the direct relationship between low salaries and high turnover.

In addition to these specific issues, there were a number of general suggestions that seemed to be valuable to workshop participants. These are as follows:

1. During the initial discussion with potential applicants, seek a broad problem definition.
2. Remember that it is extremely difficult to differentiate between wants and needs.
3. Ask an applicant "Who is against this service you seek?" and then go talk to opposition yourself.
4. Remember to offer seriously and consider a "no transit" or "no build" alternative early on in discussions with a potential applicant. Perhaps the informal transit arrangements that are occurring are truly adequate.
5. Although formal training may be beneficial to operators, don't overlook manuals, case studies, and the experience of "old timers" in the field.

PLANNING AND IMPLEMENTATION. CHAIRED BY JOSEPH REVIS; GROUP RECORDER JOHN JOHNSON, SAN BERNARDINO ASSOCIATED GOVERNMENTS

Participants in the focus group on transportation planning discussed a range of issues and problems relating to planning and implementing transportation services on Indian reservations. The most important single problem area, in the opinion of the participants, was the lack of resources available for transportation planning and operations. There was general agreement that lack of funds restricts transportation service planning activities on reservations.

Another area of concern was the general lack of technical planning skills on reservations. The concomitant issue of lack of operating experience was also raised; and the importance of developing training programs and/or making technical assistance available for both planning and operations was stressed.

One area identified as important for providing transportation services to and from reservations was developing good institutional links with outside communities. However, because of the relative autonomy of Indian reservations, service linkages to outside areas tend to be complex, and cooperative arrangements are difficult. It was urged that, in the future, an important objective should be to develop means for improving linkages and institutional relationships with outside communities.

Finally, there was discussion of capital equipment, particularly vehicles. The general consensus was that it is important to make available technical information on vehicles and related equipment. It was also noted that reservations should work more closely together regionally and nationally to share transportation skills and experience.

MARKETING AND DEVELOPING RIDERSHIP. CHAIRED BY PETER SCHAUER;
GROUP RECORDER, BERRI STANDISH, WRI, WASHINGTON, D.C.

The marketing focus group reviewed and delineated the required marketing process for rural public transportation under the following topics:

Marketing definition: The activity of marketing includes developing services to fit consumer needs, selling the services offered, informing the public, understanding who the clients are (e.g., socioeconomic profile) and what they want, developing communication to and from the client, and developing outreach programs.

The three principal categories or elements of marketing are the product, pricing, and placement (of the product in the marketplace). This requires market research and promotion.

The historical perspective of marketing in transit operations, as seen by the focus group, was: 1950s--a period of boasting about

the qualities of the service; 1960s--image building; and 1970s and 1980s--the "positioning" era. The term "positioning" derives from the article "The Positioning Era" by Jack Trout and Al Reis¹. It pertains to developing a perspective or image of the product being offered in the mind of the customer, how such a position can be obtained, and at what cost.

The marketing tools that might be applied are various gimmicks (e.g., coffee and refreshments on bus, free rides); radio, television and other media advertising; posters in stores, senior centers, libraries and other public places; and transit passes and other forms of price discounts for regular riding.

There is the question of timing and frequency of advertising. Various approaches include pulse advertising--advertising intensively at frequent intervals; blitz--advertising everywhere at the same time; trickle advertising--constant, small amounts of advertising repeated continually.

The group members summarized their views as follows:

1. Successful marketing must be based on a thorough knowledge of the market, the product and the available marketing resources. An example: if socialization on the transit vehicle is important to clients, this is emphasized in advertising.
2. Marketing may be aimed at changing the system to meet market needs, not at merely selling the existing service. Example: changing a route to satisfy passenger trip needs.
3. The marketing budget should be planned carefully, balancing costs of marketing with anticipated returns.
4. The driver is the best marketing tool as he or she deals directly with the passenger on a daily basis. Thus, the driver should be selected carefully and trained well relative to his or her impact on the planned marketing "position".

¹Advertising Age, April 24, May 1, and May 8, 1972.

FUNDING. CHAIRED BY LYNN SAJAH

The essence of the results of this focus group is given in the overall workshop summary below.

WORKSHOP SUMMARY

The workshop closed with an evening plenary session moderated by Lynn Sajah of UMTA in which the participants attempted to summarize their views of the conference results and effects. It was unanimously agreed that the meeting was highly successful in terms of the mix of persons attending, the enthusiasm generated in discussions, and the feelings expressed by nearly everyone that much had been learned. Attendees included representatives of state DOTs, U.S. DOT, rural public transportation operators, tribal associations, specific tribes, human service agencies, and tribal planning consultants.

The most discussed and emotionally laden issue concerned the emerging tribal-state relationship induced by the Section 18 rural transportation program. Indian representatives see this as undermining the traditional tribal-U.S. relationship founded on historic concepts of a nation-to-nation equality and tribal sovereignty. The Section 18 grant application process requires not only tribal-state but also tribal-MPO and tribal-county relationships wherein tribal representatives must compete with other local jurisdictions in a local political arena for their share of funds. Indian groups tend not to have adequate representation on MPO boards and on MPO administrative staffs.

Planning and developing transportation service on reservations is hampered by a range of problems including extremely low population density, lack of training and, thus, of tribal skills in transportation subjects, and shortage of transportation management skills. It was also emphasized that public transportation operations

have not as yet been properly integrated into overall tribal organization and, thus, there is a lack of institutional structure and support for transportation functions.

Rural public transportation on reservations tends to be a microcosm of that in the rest of the rural United States with its problems magnified. Reference was made to the presentation by Mr. Keith Begay of the Navajo Nation and the extreme problems encountered in transportation planning even though the Navajos are the largest and best financed of all Indian tribes.

It was also concluded that although tribal transportation programs do mirror the problems of rural transportation in general, they also have unique aspects, particularly in terms of goals, goal structuring, and decision-making processes.

Cases were cited showing that racism between Indian and white societies still exists and is manifested in discrimination in relationships between state, local and tribal groups.

The workshop attendees unanimously agreed that this workshop must represent a new beginning of dialogue between Indians and non-Indians. A national forum is needed to continue to seek solutions to problems. It was agreed that the Transportation Research Board Committee on Rural Transportation should continue to provide some leadership and that future meetings should be held on Indian land, possibly attached to Indian-run conferences concerning larger Indian problem areas.

PARTICIPANTS

The following people participated in the Workshop on Rural Transportation on Indian Reservations:

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APPENDIX A
ANNOTATED BIBLIOGRAPHY OF RURAL TRANSPORTATION
REPORTS PREPARED BY STATE AGENCIES

The following five rural transit development plans for counties in the state of Utah were prepared for the Utah Department of Transportation, 405 South Main Street, Salt Lake City, Utah 84114.

1. Five County Association of Governments Transit Development Program, 1981 Update.

The five counties included in this report--Beaver, Garfield, Iron, Kane, and Washington counties--comprise 17,488 square miles in the southwestern section of Utah with an average population density of 3.16 persons per square mile. The purpose of this assessment was to examine the transportation needs of elderly, handicapped, and low-income groups within the target area. Through personal interviews, questionnaires, and an evaluation of current available transportation alternatives, the Association of Governments sought to answer such questions as: Where do the target groups travel for needed services? How do they travel there? How much does it cost them? Can they go as often as they need to?

Following the assessment and current needs and levels at which these needs are met, projections of future needs are outlined and recommendations made for meeting these.

2. Six-County Rural Transit Development Plan, prepared by Six-County Commissioners Organization, Office of Community and Natural Resource Planning, 1981.

Basically the same type of plan as the one above, relying more on demographic data than on interviews and questionnaires. The six county area is primarily in east-central Utah covering an area of roughly 16,971 square miles with a population of approximately 46,000 people.

3. Barnett, Keith, Transit Development Plan, 1981.

This plan is for four counties in southeastern Utah encompassing some 17,800 square miles and approximately 38,000 people. Rather extensive review is given of existing special transit systems. While the author states that the resolution of the problems found in the present transit systems are not within the scope of this document, he feels that the critical element in future planning is money.

4. Uintah Basin Association of Governments Transit Development Plan, 1980.

The Uintah Basin includes three counties covering about 8,424 square miles of land, a small part of which is under private ownership (22.3%). Federal and state agencies control sizeable portions as does the Ute Indian Tribe in two counties. The population of the Uintah Basin is approximately 46,231. A section of this plan is devoted to listing the energy projects operative in this section of the state and considering employment impact upon the area population and subsequent transit needs. Needs of the elderly and handicapped are addressed, but clearly the largest impact upon transit need in this area is due to come through employment and population demand.

5. Ganapes, Lucia, Transportation Development Plan of the Bear River Planning District, 1981.

The Bear River District is located in the extreme northern portion of the state and includes Box Elder, Cache, and Rich Counties. The district encompasses about 7,800 square miles with a population of 92,547. In addition to the usual description of service area and existing services, this plan describes in detail five operational alternatives to meet transit needs as well as two financial alternatives. Chapter 4 outlines eleven goals for the Bear River Planning District and applies the alternatives suggested above to determine their relationship to the goals.

* * * * *

The following four reports were prepared by the Transportation Center, University of Tennessee, for the Bureau of Mass Transit, Tennessee Department of Transportation, 505 Deadrick St., Nashville, Tennessee 37219.

6. Hood, Thomas and Linda Geiss, The Volunteer Transportation Program, April 1980, TC 80-006.

This study covers all aspects of the use of volunteer personnel in a transportation program. Part I explores the question of establishing a volunteer transportation program versus other available options; Part II addresses the special problems that arise in the use of volunteers; Part III gives a detailed format of how to organize a volunteer transportation program from (Step 1) Planning through (Step 5) Evaluation. The report contains an excellent annotated bibliography and, in Appendix, a volunteer-driver guide.

7. Baska, Eugene, Frederick Wegmann and Arun Chatterjee, The Use of Radio Communications in Rural Transportation, March 1980, TC 79-018.

The objective of this report, as defined by the authors, is "to identify the ways in which radio communication systems are used in the operation of rural transportation programs and to determine what effect the radio has on the efficiency, productivity, cost, and management of these programs." It, therefore, provides guidelines for rural transportation program directors who are considering the purchase of a radio system.

The report is laid out in four parts. First is a brief description of how a basic two-way radio system works. Next is a discussion of radio systems available to rural transportation programs and the merits of each, followed by case studies of several rural transportation programs in Tennessee that have experience with radio communications. The final section summarizes the advantages of a radio communications system, indicates costs involved, and provides guidelines for purchasing a system.

8. Chatterjee, Arun, Wilford Sommerkorn and Frederick Wegmann, User-Side Subsidy Transportation Programs for Small Urban and Rural Areas, February 1980, TC 80-002.

A comprehensive view of user-side subsidy transportation, this study begins with a background on the basic concept of user-side subsidy which includes brief descriptions of such programs around the country. It then focuses on three sites in Tennessee where the concept is applied. For each location, coverage includes: community characteristics, historical background of the systems, service characteristics, subsidy program and administration, demand and user characteristics, costs of providing service, perspectives of different interest groups, summary of highlights and comments. Following the case study of each site, the authors present a comparative description of the three programs within the first seven categories listed above. An appendix provides an annotated bibliography on the subject.

9. Wegmann, Frederick and Arun Chatterjee, Rural Transportation Record-Keeping: Problems and Opportunities, February 1980, TC 79-017.

Commenting on the frustration experienced by transportation operators in addressing the issue of record keeping, the authors cite three basic reasons for record keeping: 1) records meet contractual requirements; 2) records assist in determining if the service is addressing the goals and objectives set out for it; 3) records provide feedback for management decisions on operational procedures and future budgeting.

Record keeping procedures of six rural transportation systems are reviewed and data formats suggested which would provide operators with the ability to define persons service, service rendered, and resources expended. The report aims at making record keeping as simple as possible and encouraging the collection and analysis of only those data items that are actually useful to

the sponsoring agency and transportation manager. Appendices include examples of forms used by one rural transportation system and common cost accounts for transportation service coordination.

* * * * *

10. Leffers, Daniel, Linda Rouse, and R. Seth Budget, Zanesville Transit System: Ohio Transit Evaluation Program, prepared by the Institute for Urban Transportation, Indiana University, for the Ohio Department of Transportation, P.O. Box 899, Columbus, Ohio 43216, 1979.

The Zanesville Transit System was two years old at the time of this evaluation. From 1978 to 1979, the system increased ridership by 29%, while decreasing costs by 12%. The evaluation covers six major categories of transportation operation: management and organization; planning and marketing; transportation (operations); maintenance, purchasing, and inventory; finance and accounting; personnel and labor relations. In addition to the findings within the Zanesville system, each section contains useful analysis and pointers on running an effective and efficient transportation operation.

11. "Mini-Transit" Vehicles and Equipment, published by Montana Department of Commerce, Transportation Development Division, 1424 - 9th Avenue, Capitol Station, Helena, Montana 59901-0430.

A brief report (14 pages) summarizing the findings of a survey of special transportation operators in the state of Montana. The survey's purpose was to assess the adequacy and durability of vehicles and equipment purchased with 16(b)(2) grants. The report contains specific information on vehicle types, conversions, lifts and ramps. Its intent is to provide assistance to prospective buyers in purchasing vehicles that are best suited for them.

* * * * *

The following two reports were prepared by Patricia Moore for the Ohio Department of Transportation, P.O. Box 899, Columbus, Ohio 43216.

12. Moore, Patricia, A Public Transportation Development Program for Sidney, Ohio, 1979.

A proposed city-wide demand responsive public transportation system is described which would serve a town with 1970 population of 16,332. At the time of this report, some transportation existed for special groups; but no public transit or taxi service was in place. The new service's priority users are expected to be the elderly, the handicapped, the low income, and the young. The report begins with a description of the service area. A program description includes all aspects of operations and administration: type of service, level of service, vehicle utilization, coordination of efforts, elderly and handicapped provisions, and manpower requirements. Areas of responsibility are defined listing specific tasks required to meet those responsibilities.

13. Moore, Patricia, A Public Transportation Development Plan for Geauga County, Ohio, 1980.

The format of this study is the same as described above; however the scope and variety of service required to fit the needs of this service area is much wider. Geauga County consists of sixteen townships and five unincorporated villages covering roughly 648 square miles. Service in the county at the time of this study included several inter-city providers, a demand responsive service for the general public, one taxi company, and several private organizations providing special transportation. This plan would expand the current demand responsive system from four vehicles to nine vehicles. While continuing the current demand responsive system, expansion would incorporate service from residents' homes or general pick-up points to bus shelters along the private operators' fixed routes. Three figure eight loops would be established to hook up with fixed routes. The County would also provide subscription service for those citizens who are employed at several large manufacturers along the loops.

* * * * *

14. Public Transportation Services In New Hampshire, prepared by the Office of State Planning, 85 London Road, Concord, New Hampshire 03301, 1971, NH-09-8004.

This report compiles the findings and recommendations of each of six Regional Planning Commissions in the state of New Hampshire. The format followed by each region includes: a) a description of the service area with attention to the needs of transportation disadvantaged residents like the elderly, the young, the handicapped and the poor, b) a summary of existing transportation services, c) a discussion of the needs and transportation problems within the region, and d) a plan for meeting these needs which presents alternatives thought to be most applicable to the specific region under consideration.

15. Regional Transit Development Plan, prepared by the Upper Explorerland Regional Planning Commission, for the Iowa Department of Transportation, 5268 N.W. Second Avenue, Des Moines, Iowa 50313.

The region for which this plan was prepared is located in extreme northeastern Iowa and covers a five-county area of 3,304 square miles. Region I supports a multitude of smaller cities, the majority of them with populations under 500. An early conclusion in this study is that there is no service that caters to the needs of the individual commuting to and from work. Goals and objectives for this plan were formulated through public meetings and surveys. Based on these goals, alternatives were formulated which occupy a continuum ranging from a reduction in funds and a concomitant reduction in service to an increased commitment to transit with added service provided.

16. Rural Public Transportation: A Mobility Need Long Ignored by Decision Makers, a report by the New York State Legislative Commission on Critical Transportation Choices, 1981.

This report examines the problems in and prospects for the provision of public transportation services to rural residents. After initially discussing the definitional problems of "rural" transportation systems, the report analyzes the need for governmental involvement in local and intercity rural public transportation, both now and in the future. The final section of the report recommends State action. These recommendations are premised on three unifying principles: a. the State should assure all rural residents access to essential transportation services; b. the most efficient method of fostering essential local public transportation in rural areas is by coordinating and consolidating existing service; c. intercity bus transportation serving rural communities must be preserved and its basic infrastructure upgraded.

* * * * *

The two following studies were prepared by Peter Schauer Associates for the Wisconsin Department of Transportation, P.O. Box 7913, Madison, Wisconsin 53702.

17. Oneida Tribe of Wisconsin Passenger Transportation Feasibility and Planning Study, June, 1982.
18. Menominee Indian Tribe of Wisconsin Passenger Transportation Feasibility and Planning Study, June, 1982.

Each of these studies contains background information on the tribe, a description of existing transit services, and the goals and objectives of the tribe. Transit alternatives and service improvements are presented. Five-year operational projections and service implementation procedures are outlined.

Both studies resulted in new rural transit services for the tribe.

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19. San Juan Region Transit Development Program, 1980 - 1985, prepared by Ellen Gerstenberger Associates and Peter Schauer Associates for the San Juan Regional Commission, 1911 North Main, Durango, Colorado, 1980.

This Transit Development Plan contains an analysis of existing services as well as a transportation needs analysis with various methods employed for estimating demand. A detailed operation plan is presented.

The Lower Arkansas Valley Transit Development Plan was also prepared by the above mentioned firms and can be obtained from the Lower Arkansas Valley Council of Governments, Las Animas, Colorado 81054.

MANUALS AND GUIDELINES

20. Equipment and Maintenance Manual for Lightweight Accessible Bus Operations, prepared by the Montana Department of Commerce Transportation Division, 1424 9th Avenue, Capitol Station, Helena Montana, 5690-0430, 1981.

This manual is designed to aid operators in the selection, operation, and maintenance of their vehicles. Information is included to assist agencies in making inspections of vehicles upon delivery and in setting up an adequate maintenance program. The report contains information on three types of vehicles-- vans, modified vans, and body-on-chassis small buses. It describes seating arrangements for various types of vehicles, and stresses the matching of vehicle to service for improved efficiency. Vehicle equipment is discussed with particular attention to the wheelchair lift. A final section is devoted to preventive maintenance and preservation driving, i.e., driving with a conscious effort to prolong the worklife of the vehicle.

21. Ohio Rural and Small Urban Public Transportation Manual, Ohio Department of Transportation, P.O. Box 899, Columbus, Ohio 43216.

This manual includes sections on: 1) planning, 2) accounting and budgeting, 3) grant application procedures, 4) procurement, 5) property management, 6) reimbursement, 7) operational data reporting.

22. Miller, James, Pennsylvania Transportation Institute, Transit Planning Guidelines for Small Urban Areas, prepared for the Pennsylvania Department of Transportation, Harrisburg, Pennsylvania 17120, 1978.

This paper gives recommendations on: committee structure; establishing of goals and objectives; inventorying existing systems; demand forecasting; generation and evaluation of alternative systems; organizing and managing.

* * * * *

The following three manuals were prepared for the South Carolina Office of the Governor, Division of Transportation, 1205 Pendleton Street, Columbia, South Carolina 29201.

23. South Carolina Transportation Management and Operations Manual, prepared by Affiliated Management Systems, Inc. in association with Carter/Goble Associates, Inc., 1981.

A 543 page manual that draws from other sources around the country and covers every aspect of transit management and operations.

24. South Carolina Transportation Marketing Manual, prepared by Carter-Goble-Roberts, Inc., 1980.

The manual is designed to be "a systematic approach to the marketing management of a transit system, with the primary objective of better service for more customers." Following a section on marketing organization, the manual presents an action plan of practical project development suggestions which include such areas as: 1) public perception; 2) selling the system to political leaders and the business community; 3) media and public information ideas; and 4) ways to increase customer satisfaction.

25. South Carolina Financial Operating Manual for Transportation Providers, prepared by Carter-Goble Associates, Inc., 1982.

The purpose of this manual is to offer a "one-stop" source book for financial managers and bookkeeping personnel who are responsible for correctly accounting for the expenditure of Federal/State funds by the transportation provider. The preparation of the manual was brought about because of the recognition by the South Carolina Transportation Accounting Project of the often confusing and, in many cases duplicative, restrictive or overlapping financial accounting procedures required by the various Federal and State programs concurrently supporting operations for several different types and sizes of transportation providers. Topics covered in the manual include: contracting; financial management systems; recordkeeping/reporting requirements; bonding and insurance; procurement standards; and audit guide.

FEDERAL RESOURCES

These Federally-prepared reports were not included in Appendix B.

26. Rural and Small Urban Transportation Systems prepared by the U.S. Department of Transportation, Washington, D.C. 20590, 1981.

This report provides a summary of some transportation research, technical assistance or technology sharing activities targeted at rural or small urban transportation systems. In addition to the summaries, contact persons and offices are given for obtaining information on any summarized report as well as general technology sharing contacts in each of the states.

* * * * *

Following are two reports prepared by Multisystems, Inc. for the U.S. Department of Transportation which were not included in Appendix B.

27. The Coordination of Pupil and Non-Pupil Transportation, UMTA-MA-06-0049-81-13, March 1982.

At present, home-to-school student transportation and general public transit services are provided almost entirely by separate vehicle fleets. The fact that both of these fleets are not fully utilized throughout the day indicates that there may be the potential to reduce the cost of these operations or to provide additional service to the public by coordinating the two operations. This report examines the potential benefits and disadvantages of coordinated services and identifies barriers to their implementation. The report 1) provides a background on the provision of school transportation; 2) discusses issues involved in the coordination of services; 3) examines a number of examples in which such services have been established; 4) investigates the benefits which can be achieved; and 5) determines what basic system designs are likely to be most effective in generating benefits and applicable to a variety of sites. The report concludes that some coordination efforts should prove worthwhile and suggests several designs for further consideration and testing.

28. Mercer County (N.J.) Coordination/Consolidation Demonstration Project, UMTA-NJ-06-0008-81-1.

From November 1977 through June 1981, Mercer County was the site of an UMTA Service and Methods Demonstration of coordination of human service agency transportation programs. The Mercer County Coordination/Consolidation Demonstration Project involved the consolidation of several transportation services within a specially-created division of the county government--TRADE (Transportation Resources to Aid Disadvantaged and Elderly). The evaluation report covers the period through December 1980.

TRADE evolved into a system incorporating 5 agencies, with a fleet of 18 vehicles. The monthly ridership (through 1980) was over 11,000, including approximately 1000 unduplicated users. The ridership figure is higher than many similar types of systems. The productivity of 5.89 trips per vehicle hour and the unit operating cost ratios, i.e., cost per trip, cost per mile, and cost per vehicle hour, of \$2.00, \$0.86, and \$10.93, respectively, compare very favorably with other coordinated and consolidated systems. Various problems were encountered during the project's development, including problems securing agency participation, frequent vehicle breakdowns (and slow maintenance), limited fuel availability, high personnel turnover, and a general lack of support from the County Administration.

A number of evaluation findings have definite implications for other sites considering development of coordinated/consolidated systems. The most important transferable findings can be summarized as follows: 1) consolidation may be, in some instances, easier to achieve than "lower" levels of coordination; 2) it is unrealistic to expect that all agencies in an area will benefit from participating in a coordinated/consolidated system; and 3) both perceived and real barriers can prevent the development of extensive trip-sharing in a coordinated/consolidated system.

APPENDIX B
RELATED REFERENCES IN THE
NATIONAL TECHNICAL INFORMATION SERVICE (NTIS)

184586 DA
SOURCES OF NON-FEDERAL SUPPORT FOR PUBLIC TRANSPORTATION
PROGRAMS IN NON-URBANIZED AREAS

3. Kilder, AE
North Carolina Agricultural and Technical State U;
Transportation Institute; Greensboro; North Carolina; 27411
Jun 1978 120 p. 1978
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: UMTA-MC-11-0004-78-2; PB-284410
SUBFILE: HRIS

The purpose of this study was to find out the extent to which states and localities are spending nonfederal funds in support of public transportation in non-urbanized areas. A survey was administered to state officials in transportation or highway departments, to social service agencies of the state whose budgets include significant funding for client transportation, to ascertain current and projected expenditures. This report presents the results of a survey of twenty-five states, estimating the extent of nonfederal support for public transportation programs in rural areas. The survey found \$36 million dollars of state funds, and three million dollars of substate funds supporting public transportation in these areas. Based upon these figures, it is estimated that at least \$78 million are spent annually from nonfederal sources, and that the trend in such funding is upward. Passage by Congress of operating assistance programs for rural areas would enlarge the figure. The principal focus of nonfederal funding is to match social service based budgets used to enhance mobility of the transportation dependent in nonurbanized areas. Two dollars of "special service" transportation money is spent at the state level for every one dollar of "general service" public transportation in nonurbanized areas. /UMTA/

314081 DA
A SECTION 147 RURAL PUBLIC TRANSPORTATION DEMONSTRATION
MANUAL. NUMBER 3. RURAL PUBLIC TRANSPORTATION COORDINATION
EFFORTS
Ketola, HN
Applied Resource Integration Ltd., Boston, MA.; Department
of Transportation, Washington, DC.
Aug 1979 45p

AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: DOT-1-79-6; PB80-181415
SUBFILE: NTIS

The technical manual discusses coordination and the role it plays in developing successful rural public transportation programs. The report stresses that coordination must begin early. Involve as many participants as possible, and be carried forward through the planning, operation, and implementation of a project. Four sections elaborate on coordination with respect to community support, regulatory considerations, the role of public and private operators, and the role of human service agencies. See also Number 2, PB80-181407, and Number 4, PB80-181423. Also available in set of 5 reports PC E13, PB80-181381.

094034 DA
THE USE OF EXISTING FACILITIES FOR TRANSPORTING
DISADVANTAGED RESIDENTS OF RURAL AREAS. VOLUME ONE. GUIDE FOR
TRANSPORTATION PROVIDERS

1. Hauser, EW; Rooks, EH; Johnston, SA; MacGillivray, L
Research Triangle Institute; P.O. Box 12194; Res Triangle
Park; Washington; North Carolina; D.C.; 27709; 20590
Jan 1975 151 pp 1975
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: RTI-26U-956-Vol-1; FHWA/SES-75/06-1;
PB-248746/OST
CONTRACT NO.: DOT-FH-11-8261; Contract
SUBFILE: NTIS; HRIS

This Guide constitutes the first volume of a two-part study. It emphasizes solutions to the transportation problems of the elderly, the handicapped, and the poor people in rural areas. More general treatment has been given to the problems of other transportation disadvantaged groups such as the young and persons in autoless and one-car families. Programs were investigated that were determined to be sufficiently flexible to promote increased use of privately owned automobiles, taxis, vans, or buses by the rural disadvantaged groups. See also Volume 2, PB-248 747.

094035 DA
2. THE USE OF EXISTING FACILITIES FOR TRANSPORTING
DISADVANTAGED RESIDENTS OF RURAL AREAS. VOLUME TWO
Hauser, EW; Rooks, EH; Johnston, SA; MacGillivray, L
Research Triangle Institute; P.O. Box 12194; Res Triangle
Park; Washington; North Carolina; D.C.; 27709; 20590
Jan 1975 Res. Rpt. 321 pp 1975
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: RTI-26U-956-VOL-2; FHWA/SES-75/06-2;
PB-248747/8ST
CONTRACT NO.: DOT-FH-11-8261; Contract
SUBFILE: NTIS; HRIS

Volume 2 continues the survey of a variety of programs for improving the mobility of the transportation disadvantaged using only locally available resources--public or private vehicles. The vehicles range from small buses to 7-14 passenger vans to private cars. The programs include volunteer drivers in their own cars, leased personal vehicles, subscription service, transportation service by social service agencies, regular fixed-route/fixed-schedule service, and others. The report is a manual for laymen, based on the authors' suggested planning methodology as demonstrated in a Southeastern rural area. Ten alternative transportation programs were examined for their potential utility. The Delphi technique translated non-quantifiable goals into quantified data. See also Volume 1, PB-248 746.

138452 DA
5. ROLE OF PARATRANSIT IN RURAL TRANSPORTATION

Saltzman, A
North Carolina Agricultural and Technical State U
Transportation Research Board Special Reports N164 pp
137-142 6 Ref. 1976
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

Rural travel characteristics are briefly discussed and comments are made on the growth of public transportation in such areas. The economic efficiency and consolidation of resources related to rural transportation are described. The need for effective managers with entrepreneurial skills is indicated, and the question of whether to focus on special services for subgroups of the population or to provide a variety of services for the general public is considered. Small, person personalized systems providing door-to-door service were first developed in rural areas by community action agencies. Although the cost per passenger trip is high (very long trips are being serviced; and the average load factors are more than 65 percent) for rural transit, 2 important factors indicate that these systems are being operated at reasonable cost and are quite efficient. The greatest impact on transportation in rural areas will come from finding ways to more efficiently use equipment and labor that various agencies currently use to provide paratransit services. Regulations that do not allow flexibility in the use of currently available transportation funds must be changed. The need is indicated for an academic option at universities that would train students in planning and managing specialized transportation services. Paratransit: Proceedings of a conference held November 9-12, 1975, conducted by the Transportation Research Board, and sponsored by the Urban Mass Transportation Administration.

138455 DA
6. NONURBANIZED PUBLIC TRANSPORTATION; A FEDERAL PERSPECTIVE

Reichart, BK
Federal Highway Administration
Transportation Research Board Special Reports N164 pp
157-162 1976
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

A selected number of demonstration projects are described which were identified for funding by the Federal Highway Administration and the Urban Mass Transportation Administration. This study of 45 projects which were designed to demonstrate how the mobility of nonurbanized residents may be improved, provides information that will be useful to both federal and state governments in framing future policies and programs to meet the public transportation needs of rural areas. The projects represent a wide variety of schemes ranging from fixed-route, scheduled general services to an assortment of demand-responsive van operations and an

institutionalized volunteer transportation concept. The New York, Pennsylvania, Tennessee, Oklahoma, North Dakota, California, and Oregon projects reviewed here, indicate that the question of the provider of the service depends on many local conditions and experiences. The importance of the state's role as coordinator is emphasized. Localities must explore all existing transportation resources particularly because federal assistance programs will be service oriented and will emphasize improvement of services to meet the needs. Comments are made related to the planning required to develop service-oriented approaches. Comments are also made on the nature of the financing. The studies show that paratransit because of its ability to adapt to various needs, will contribute significantly to the effort to provide public transportation in rural and nonurbanized areas. Paratransit: Proceedings of a conference held November 9-12, 1975, conducted by the Transportation Research Board, and sponsored by the Urban Mass Transportation Administration.

177333 DA
7. PREDICTING DEMAND FOR RURAL TRANSIT SYSTEMS

Burkhardt, JE; Lago, AM
Ecosometrics, Incorporated
Traffic Quarterly VOL. 32 NO. 1 Jan 1978 pp 105-129 1
Fig. 5 Tab. 1978
SUBFILE: HRIS

The object of this research report is to present a simpler method of predicting the patronage of rural public transportation systems. Previous methods of estimating the need or demand for rural public transportation are discussed. These methods include subjective, gap analysis, surveys, per capita aggregate estimates, and simulation of demand functions. Using data from approximately 100 existing rural transport systems, simulation models of factors influencing the number of riders were developed. It was found that reliable estimates of demand could be produced by using a small number of variables that described characteristics of the area and people served, and attributes of the transportation system. The elements affecting the ridership of rural demand-responsive transit systems are similar to those affecting the demand for rural fixed-route transit systems, but there are significant differences in the definition of area served, trip generation, and measurement of service responsiveness. The following factors were identified as having a major influence on the number of persons that can be expected to ride a given rural transit system: Monthly bus miles; availability of service; population served; other public transportation systems; distance; and fares. The greatest benefit of the demand equations is that they provide a rough estimate of how many people might use a system according to specific rural area and transit system conditions.

- 341787 DA
8. **POST-BUS FOR RURAL PASSENGER TRANSPORTATION AND RURAL MAIL DELIVERY: AN IDEA WHOSE TIME HAS COME (ABRIDGMENT)**
Adams, DE
Transportation Research Board
Pennsylvania State University, University Park
Transportation Research Record N797 1981 pp 76-79 i Fig. 2
Tab. 9 Ref.

AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

Rural areas have a growing need for public transportation, but service is declining due to high costs and diminishing subsidies. The U.S. Postal Service faces similar problems with its rural service. A number of European countries faced similar problems and have solved them, to some extent, by combining public transportation with mail deliveries. Several studies have shown that this approach may be successful in this country. The possibility of reducing the cost of providing both services by combining them demands experimentation. (Author) This paper appeared in Transportation Research Record No. 797, Transit Planning and Management.

- 303942 DA
9. **MAINTENANCE PLANNING FOR SMALL TRANSIT SYSTEMS (ABRIDGMENT)**
Bakar, MM; Glueckstein, H, Jr
Transportation Research Board
Wisconsin University, Milwaukee; Meyerhaeuser Company
Transportation Research Record N718 1979 pp 45-46 i Fig. 4
Ref.

AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

This paper discusses a study of maintenance operations for small transit systems. The study, conducted in 1976, focuses attention on two systems in Wisconsin--the Bell Urban System (BUS), which serves the Racine area, and the Sheboygan Transit System, which serves the city of Sheboygan and some of the surrounding communities. The study deals with the current maintenance facilities and procedures, as well as with expected future needs. A review of available maintenance reporting and planning systems such as the Service, Inventory, and Maintenance Systems (SIMS) and BUS reveals that such systems could not be supported efficiently in small transit systems. This paper appeared in TRB Research Record No. 718, Bus and Rural Transit.

- 091655 DA
10. **RURAL MASS TRANSPORTATION FEASIBILITY STUDY**
Brown, NA
Bluegrass Area Development District, Incorporated;
Lexington; Washington; Kentucky; D.C.: 20235
Jun 1973 Final Rpt. 127 pp 1973

AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
PB-241186/6ST

CONTRACT NO.: ARC-73-67/KY-2297; Grant
SUBFILE: NTIS: HRIS

The study report is an examination of transit related problems of the six Appalachian counties within the Bluegrass Area Development District (Clark, Estill, Garrard, Lincoln, Madison, and Powell). It outlines steps for the implementation of a rural mass transit system including cost analysis and forecasted benefits during a four year phased period.

- 300695 DA
11. **COSTS OF RURAL PUBLIC TRANSPORTATION SERVICES**
Burkhardt, JE
Transportation Research Board
Ecosometrics, Incorporated
Transportation Research Record N696 1978 pp 27-31 7 Tab. 12
Ref.

AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

Typical costs for rural transportation operations and the factors that influence such costs are examined. Until now, few hard data have been available for the purpose of describing rural transportation costs. The data used in this research are taken from applications for funding and actual operations performed under Section 147 of the Federal-Aid Highway Act of 1973, the Rural Highway Public Transportation Demonstration Program. The following aspects of rural transportation costs are investigated: (a) general cost ranges and what constitutes average and "good" costs, (b) factors that affect the cost of operations, and (c) the characteristics of the most economical and most expensive hypothetical system designs. /Author/ This paper appeared in TRB Record No. 696, Rural Public Transportation.

335582 PR

12. FEASIBILITY OF VARIOUS MODES OF PASSENGER TRANSPORTATION IN RURAL AREAS

INVESTIGATORS: Doeksen, G
PERFORMING ORG: Oklahoma State University Stillwater
Oklahoma 74074

SPONSORING ORG: Oklahoma State University

SUBFILE: HRIS; UMTRIS
PROJECT START DATE: 7810
PROJECT TERMINATION DATE: 8009

Develop a conceptual and operational framework to analyze alternative passenger transportation systems in rural areas. Transportation systems in respect to mode and operating procedures. Include bus, van pooling, taxi, jitney, private automobiles operated by volunteers or part-time drivers. Operating procedures include: private vendors, public transportation authorities and cash payments to persons who cannot afford to purchase transportation systems which allow the local decisionmakers or private businesses to determine the economic feasibility of alternative passenger transportation systems in their communities. Determine the demand for and costs of providing passenger service within and among rural communities. Develop budgets which include: procedures to estimate the costs of various modes of passenger service such as capital expenditures, labor, insurance, other business services; procedures to estimate the demand for various modes of passenger transportation within and among rural communities. Design budgeting manuals which can be used by local businesses and decisionmakers to evaluate the feasibility of providing alternative passenger transportation systems in their communities. The main product of this research is development of a guide for local decision makers on the costs and income from various modes of car, van, or bus community transportation systems in rural areas.

13216 DA

13. SMALL CITY TRANSIT: MERRILL, WISCONSIN, POINT DEVIATION SERVICE IN A RURAL COMMUNITY

Mergel, J

Transportation Systems Center: .55 Broadway: Cambridge: Washington, Massachusetts; O.C.: 02142: 20590
Mar 1976 Final Rpt. 18p 1976

AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161

REPORT NO.: DOT-TSC-UMTA-765-11; UMTA-MA-06-0049-76-1;
PB-251511/251

CONTRACT NO.: MA-06-0049; Contract

SUBFILE: NTIS; HRIS

Merrill, Wisconsin is an illustration of an innovative point-deviation transit service. This case study is one of thirteen examples of a transit service in a small community. The background of the community is discussed along with a description of the implementation process and operational characteristics of the transit service. The process through which the community responds to the specific needs of transit service within the local content is stressed. See also PB-251512.

334135 OA

14. PUBLIC SPIRIT FUELS THIS VILLAGE BUS

Childs, R; Saffell, C
IPC Building and Contract Journals Limited
Nottinghamshire County Council
Surveyor VOL. 155 NO. 4610 Oct 1980 pp 6-8 + Fig. + Tab. 2
Phot.

SUBFILE: TRRL; IRRD; HRIS

The setting up of an experimental bus, serving five small villages, and its operation without the involvement of an established operator is described. It is run by a team of volunteers under the provisions of the Transport Act 1978. The operating area of the bus service is not isolated and it retains conventional services; the community bus fills in the gaps. It has been arranged so that the county council purchased the vehicle and the parish operating group determined schedules, fare levels, recruited volunteer drivers and arranged maintenance. A total of 32000 km were travelled in the first year, giving a three year life for the vehicle and an approximate running cost of 2.5p per km, which compares favourably with many conventional bus services. It is estimated that the overall net cost to the county council for the two year experimental period will be 10p per passenger. It is considered regrettable that with the phasing out of the new bus grant, the burden of initial and replacement costs will jeopardise similar new and existing schemes. The scheme is very demanding on volunteers' time, but one of the greatest incentives to the safe operation of the scheme is that all the volunteers live within and are well known by the community they serve. (TRRL)

314083 DA

15. A SECTION 147 RURAL PUBLIC TRANSPORTATION DEMONSTRATION MANUAL. NUMBER 5. MARKETING RURAL PUBLIC TRANSPORTATION

Panbianco, TS

Florida State Dept. of Transportation, Tallahassee. Div. of Public Transportation Operations.; Department of Transportation. Washington, DC.
Aug 1979 125p

AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161

REPORT NO.: DOT-I-79-8; PB80-181431

SUBFILE: NTIS

The report describes how to market transit services in rural and small urban areas. It covers how to set goals and objectives for a marketing program, developing and costing such a program, market research techniques, advertising and promotion approaches, and community relations. The report emphasizes the need to select the correct communications medium in developing a promotion strategy. Techniques described include system maps, discount fares and passes, development of printed schedules, how to ride brochures, and use of radio announcements. See also Number 4, PB80-181423. Also available in set of 5 reports PC E13, PB80-181381.

16. 163923 DA PUBLIC TRANSPORTATION: ALTERNATIVE SYSTEMS (ABRIDGMENT)

Marin, RL: Oppermann, MC
Kimley-Horn and Associates, Incorporated
Transportation Research Record N619 pp 5-7 5 Ref. 1976
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

Alternative transportation systems for rural areas which use either existing vehicles or the purchase of new vehicles with a wide range of operating and capital costs are examined. Systems requiring new equipment include: A demand responsive system; fixed route system; feeder system; subscription service system; rural family transportation system; and institutional commuter vans. Systems using existing vehicles include: Neighbor compensation system (the owner of a vehicle shares rides with a neighbor who does not have access to a vehicle); volunteer driver and vehicle system; leased personal vehicles; social service provider system; group trips (charger service); intercity bus system (would provide transportation on a fixed-route and fixed-schedule basis within a rural regional setting); and a combined school bus system. The authors conclude that having some form of public transportation available, people who were previously restricted in their travel opportunities would be able to make trips to obtain education and employment to increase their income, and would have more freedom to travel because they would no longer be dependent on other individuals for transportation. This article appeared in Transportation Research Record No. 619, Innovations in Transportation System Planning.

17. 178735 DA INNOVATIVE APPROACHES TO RURAL TRANSPORTATION

McKelvey, DJ; Watt, RS
North Carolina Agricultural and Technical State U
Transportation Research Record N661 pp 1-6 1 Fig. 45 Ref. 1978
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

This paper identifies innovative approaches to rural public transportation at federal, regional, state and local levels. There is no attempt to evaluate them. Examples include federal and regional task forces; a state assistance with planning, management, funding and cash-flow, coordination, and insurance; and local level approaches to service provision, cost savings, revenue sources, coordination, user-side subsidies, maintenance, and promotion. /Author/ This article appeared in the Transportation Research Record N661, Public Transportation Rural and Suburban Areas.

18. 189345 DA TRANSIT PROBLEMS IN SMALL CITIES AND NON-URBANIZED AREAS: INVENTORY OF TRANSPORTATION SERVICES IN PLACES LESS THAN TEN THOUSAND POPULATION OUTSIDE OF URBANIZED AREAS

Jackson, AF; McKelvey, DJ
North Carolina Agricultural and Technical State U
Transportation Institute; Greensboro; North Carolina; 27411
Apr 1978 99 p. 1978
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: UMTA-NC-11-0004-79-1; PB-291402/6ST
SUBFILE: HRIS

This report summarizes the type and level of transportation services (taxi, specialized transportation services, intracity and intercity buses) available in places between 2,500 and 10,000 population outside of urbanized areas in 48 contiguous states and the number of such services serving these communities. It also includes a section summarizing information on places under 2,500 population. In places (2,500-10,000), the inventory highlights the following unexpected results: Taxi-75% of total companies served 3 or 4 places, 18% had contracts with agencies, and State is second most common regulator and City government is the least common; Specialized Transportation Services--13% of all vehicles were equipped for non-ambulatory, 9% of the places had more than one specialized service, 50% provided demand-responsive service, and local governments operated 23% of the systems; Intercity Buses Service-service provided to only 42% of places sampled, and 7% had contracts received a subsidy; Intracity Bus Service--5% of the systems were large metropolitan systems, 52% were privately owned, and only 21% were countywide. Of the 291 sample places with population between 100 and 2,500, 27 sample places were served by 40 taxi systems; 47 were served by 54 specialized transportation systems, and 32 had intercity bus service. Four of the systems (13%) stated that they had passenger service contracts or subsidies from state or local governments. Of the 32 systems reporting capital funding assistance, two received 16 (b) 2 funding. This inventory report contains many charts/fact sheets regarding the transportation services examined. /UMTA/ Sponsored by the Department of Transportation, Urban Mass Transportation Administration.

093345 DA
19. **FORT BERTHOLD INDIAN RESERVATION BUS DEMONSTRATION PROJECT**
Crain, J.L.; Fitzgerald, P.G.; Stoffel, F.C.
Three Affiliated Tribes; Fort Berthold Indian Reservation;
New Town; Washington; Menlo Park; North Dakota; D.C.;
California; 58763; 20590
Jan 1974 Final Rpt. 203 pp 1974
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: UMTA-ND-06-0001-75-1; PB-245211/8ST
SUBFILE: NTIS; HRIS

A demonstration project was designed to develop and evaluate a transit system in a growing urban-rural Indian Region in Central North Dakota. Fort Berthold is a reservation of about 650 square miles, with an Indian population of approximately 2,774. The people reside mainly in five small towns. The distance from the main town to the most distant community is 110 miles. The primary concern of the project was to support the economic and social development of the entire region by interconnecting the various, and sometimes isolated communities with employment, commercial, medical, educational, and other centers of activity. An element of the project was to search for ways of incorporating all the transit services in the region into a package that would sustain the system at a point where it would become economically self-sufficient. Prepared by Crain and Associates, Menlo Park, Calif.

314080 DA
20. **A SECTION 147 RURAL PUBLIC TRANSPORTATION DEMONSTRATION MANUAL. NUMBER 2. PLANNING RURAL PUBLIC TRANSPORTATION SYSTEMS**
Burkhardt, J.E. Inc., Bethesda, MD.; Department of Ecosometrics, Washington, DC.

Aug 1979 71p
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: DOT-I-79-5; PB80-181407
SUBFILE: NTIS

The report describes planning processes used to establish rural transportation, and was prepared by examining planning documents and operating reports of projects funded under the Section 147 Demonstrations. It examines the premise that good planning and management measurably contributes to the potential success of rural transportation projects. The study examines system planning, startup, management, funding and alteration in separate chapters, and concludes with an overall assessment of key factors for success. These include common sense, a good project director, a willingness to change, vehicle utilization, high trips per person, and vehicle miles of service. See also Number 1, PB80 181399, and Number 3, PB80-181415. Also available in set of 5 reports PC E13, PB80-181381.

331061 DA
21. **EVALUATION OF THE BARNSTABLE COUNTY PUBLIC TRANSPORTATION DEMONSTRATION PROJECT**

Collura, J.; Warren, R.P.; O'Leary, D.P.; Bohrn, D.
Transportation Research Board
Massachusetts University, Amherst; Cape Cod Regional Transit Authority; Vanasse-Hangen Design, Incorporated
Transportation Research Record N761 1980 pp 58-65 3 Fig. 2
Tab. 6 Ref.

AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

This paper evaluates the public transportation demonstration project in Barnstable County, Massachusetts (population, 130,000; area, 100 sq km (389 sq miles); 15 towns). Service was provided with ten 12-passenger vehicles on a prearranged demand responsive basis. The demonstration project operated for 22 months and was then continued on a permanent basis. The paper addresses various aspects of planning and design, which include preliminary project planning, program monitoring, and evaluation, a rider-identification pass, data collection, user characteristics, system performance, financing, user attitudes, pricing, and simple supply-and-demand relationships. Major results and conclusions are that (a) some form of door-to-door public transportation service is necessary to meet the special needs of the elderly and the handicapped in small urban and rural areas; (b) consideration should be given to coordinating any new service of this type with similar existing services; (c) the system performance of such a service may need as much as 15 months to reach a stable condition; (d) the use of a rider-identification pass is a relatively low-cost simple mechanism by which to collect fares, market service, and obtain useful data; (e) attitudinal surveys may be helpful in determining user satisfaction and in identifying desired service changes; (f) consideration should be given to pooling various federal, state, and local funds to finance projects; and (g) any method used to apportion the local share of a deficit among towns may have to include a trip-length variable such as passenger kilometers if the desire of local officials is to base the apportionment on each town's level of use. (Author) This paper appeared in Transportation Research Record No. 761, Public Transportation Planning.

303940 DA
22. ANALYSIS OF VOLUNTEER DRIVER SYSTEMS IN RURAL PUBLIC
TRANSPORTATION (ABRIDGMENT)

Smith, RL, Jr
Transportation Research Board
Wisconsin University, Madison
Transportation Research Record N718 1979 pp 39-42 1 Tab. 10
Ref.

AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

The purpose of this study is to evaluate the potential for continuing, and even expanding, volunteer driver systems in rural areas. Case studies of volunteer driver systems in two Wisconsin counties are used to test the hypothesis that volunteer driver systems can be cost-effective, feasible means of providing high-quality, specialized transportation service in rural areas. In addition, the role of volunteer drivers systems in relation to paid driver systems that use vans or buses is examined in terms of an optimum mix of service types. Finally, the implementations of the rural public transportation operating assistance program (Section 18 of the Surface Transportation Assistance Act of 1978) are examined. The two case studies show that volunteer driver systems can provide high-quality, cost-effective transportation for the elderly in rural areas. Volunteer driver systems can provide lower costs per trip than all but the most productive van systems. Only a high-cost, taxi-like van system can approach the high-quality, door-through-door service of the volunteer driver system. Even then the volunteer system provides superior service because of the potential for personal assistance to passengers at their destination. This paper appeared in TRB Research Record No. 718, Bus and Rural Transit.

307966 DA
23. THE PARATRANSIT SERVICES OF THE CHOANOKE AREA (NORTH CAROLINA) DEVELOPMENT ASSOCIATION--RURAL TRANSIT IN COORDINATED HUMAN SERVICES TRANSPORTATION

Cook, AR
Oklahoma University Sch of Civ Eng & Envir Sci, 202 West
Boyd Street, Room 334 Norman Oklahoma 73019 OK-11-0001; Urban
Mass Transportation Administration 400 7th Street, SW
Washington D.C. 20590

Jun 1978 48 p.
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: UMTA-OK-11-0001-73-4; PB80-103260
SUBFILE: HRIS

The purpose of this paratransit agency case study was to develop basic instructional materials to support university classroom and professional short course training in local paratransit planning. This study gives background information on the Choanoke Area Development Association (CADA) and area, and reviews CADA's paratransit operations in 1978. Over 7,000 patrons use the service each month at a total cost to CADA of \$0.60 per vehicle mile, including capital and administrative overhead. The study documents the planning and implementation of news services, reviews current management and operating practices, and concludes with commentary on the local and national significance of the service. CADA has significantly increased the mobility of low income and elderly and handicapped residents of the Choanoke area and local human service agencies appear to have benefited from the availability of the CADA transportation service. The rural fixed-route bus services with feeder vans have been and should continue to be a model for rural public transportation programs. Report 4 of 6, Paratransit Case Studies

312269 DA
24. MICHIGAN SMALL BUS PROGRAM MANAGEMENT HANDBOOK

Michigan Department of Transportation Bureau of Urban and Public Transportation Lansing Michigan 48909
Sep 1979 193 p. Photos.

CONTRACT NO.: DOT-1-80-2; Contract
SUBFILE: HRIS

The State of Michigan has successfully provided small bus public transportation in small and medium-sized cities as well as in entire counties. The program has three components: interim elderly and handicapped program, transportation services consolidation program, and the general public transportation program including the small bus county incentive program and the urban and rural small bus program. This handbook which is intended to be a practical guide for system managers focuses on personnel relations, operations, management, marketing and funding. Procedures for getting through the State's grant and contract process are also included. The various chapters are as follow: Project Management (small bus start-up process, transition process; demonstration to ongoing); Operations (administrative and operating alternatives, operating procedures and forms); Contracts (state-local first party contracts, operating contracts (third party contract), site contract development procedure); financial management (accounting guidelines, charts of accounts, accounting process); Purchasing Equipment (selecting equipment, bus specifications, lift specifications, transit radio systems); Equipment Management (preventive maintenance, state accident reporting requirements); Marketing (goals and objectives, advertising, public relations, system information program, community and employee relations, evaluation, start-up activities); Personnel Management (job descriptions, driver training/retraining, personnel selection, policies and procedures); and Monitoring & Evaluation (standards of performance, surveys, use of results).

300690 DA

25. **OVERVIEW OF RURAL TRANSIT PLANNING AND IMPLEMENTATION**

Saltzman, A
Transportation Research Board
North Carolina Agricultural and Technical State U
Transportation Research Record N696 1978 pp 14-16 + Fig.
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
SUBFILE: HRIS

A typical planning and implementation process for rural transit systems is summarized. Specialized rural transit systems usually are initiated when local authorities perceive and define a transportation problem. The next step in the process is a needs and feasibility study in which efforts are made to determine whether or not a system should be started. After financial and political support are obtained, the system must then be designed and implemented. Finally, a continuous evaluation of whether the system is solving the perceived local transportation problems is necessary. The synthesis of the planning and implementation process that is described in this paper was developed from extensive information on special rural transit systems that was gathered by field visits to 12 systems and from data on other operations. /Author/ This paper appeared in TRB Record No. 696, Rural Public Transportation.

309569 DA

26. **BUS STOPS ON RURAL AND HIGH CAPACITY ROADS. MOTIVES FOR DESIGN AND LOCATION**

National Swedish Road Administration Fack S-10220 Stockholm 12 Sweden
1979 Monograph 78 p. Figs. Tabs. Refs. Swedish
REPORT NO.: Meddelande TU 1979:3;
SUBFILE: TRRL; IRRD; HRIS

This report describes background data and standpoints of a committee work preceding the design of specifications for bus stops on rural and high capacity roads. The report deals with basic criteria such as: (1) bus length, width and manoeuvring geometry, (2) bus acceleration, deceleration and jerk, (3) types of stop, (4) bus manoeuvring performance and speed. The motives for design and location are presented under the following headlines: (1) choice of stop type, (2) stop design, (3) stop location and (4) footways at stops. Appendices are dealing with the following factors: (1) design acceleration, (2) model for choice of stop type, (3) possible entrance and exit speeds at stops, (4) comparison of bus bay dimensions and (5) driving models for stop location. (TRRL)

319151 DA

27. **PROCEEDINGS OF THE FOURTH NATIONAL CONFERENCE ON RURAL PUBLIC TRANSPORTATION**

Urban Mass Transportation Administration 400 7th Street, SW
Washington D.C. 20590
Sep 1979 154p Refs. Apps.
AVAILABLE FROM: Transportation Research Board Publications
Office 2101 Constitution Avenue, NW Washington D.C. 20418
CONTRACT NO.: DOT-I-79-19; Contract
SUBFILE: HRIS

The Fourth National Conference on Rural Public Transportation was held in June 1979 in Vail, Colorado. This represented a fairly substantial period of transition for rural transit services. The Section 147 Demonstrations were in many cases winding to a close, and a landmark series of reports on their results was under preparation. The Congress had passed the new Section 18 program, which for the first time provided both capital and operating support for rural public transportation services. Although only \$75 million in FY-1979, the Section 18 money represented a "coming of age" for rural transit. To top things off, the White House was putting the finishing touches on a Rural Transportation Initiative, which was formally announced shortly after the conference. The papers presented at the conference reflect the transition taking place. Many attempted to assess the results of the Section 147 demonstrations, and speculated about their long-term implications. A major theme of the conference was coordination, and how it could be accomplished. This reflects the limited amount of Section 18 funds and provided an option for stretching available resources. A number of papers also dealt with the role of the states in managing rural transportation programs reflecting the emphasis which Section 18 places on this function. This volume contains most of the papers presented at the Fourth National Conference. Rather than following the sequence of paper at the sessions, they have been regrouped in several major areas which the conference highlighted. Some of the papers have been revised or abridged by their authors since their original presentation, and a few have been edited to make them consistent in format with the other papers in the report. (Author) Proceedings from the Fourth National Conference on Rural Public Transportation, held in Vail, Colorado, June 1979.

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28 . **RURAL TRANSPORTATION PROJECTS ON INDIAN RESERVATIONS: A**
REPORT ON ELEVEN DEMONSTRATIONS

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May 1980 Final Rpt. 211p
AVAILABLE FROM: National Technical Information Service 5285
Port Royal Road Springfield Virginia 22161
REPORT NO.: UMTA-MA-06-0049-80-8; PB81-111841
SUBFILE: HRIS

This report summarizes and evaluates eleven rural transportation projects conducted on eleven Indian reservations. They were funded under Section 147 of the Federal Aid Highway Act of 1973, as amended. The evaluations describe the transportation problems in the reservation settings, the benefits and costs of the projects, the solutions to these problems that were demonstrated, and findings and recommendations relative to governmental actions in this area. A series of appendices is included in this report. Appendix A contains background information of the last 200 years of Indian-U.S. Government relations. Appendix B is the central economic analysis of the report. Appendix C presents the proper titles and addresses of the tribes and reservations included in this study. Appendices D through N provide detailed information on each project--starting with tribal background, site conditions, and then system description. Some of the noteworthy findings from the eleven projects state that: (1) multi-purpose, fixed-route bus proved excessively costly; (2) a variety of single-purpose busing functions, meeting urgent needs, were very cost effective; (3) the lifts mounted on most buses were neither needed nor used; (4) there were no effective coordinated systems, although buses were effectively used in off-hours for recreational and social purposes; (5) costs per passenger mile varied among projects (from 7 cent to over \$1); (6) the Section 147 data process was unusable in most projects; and (7) about one-third of the grant monies passed into and out of the reservation economy without being re-spent; two-thirds went to community reservation members. (UMTA) Under contract to Transportation Systems Center, Research and Special Programs Administration.

APPENDIX C
GOALS OF THE MENOMINEE NATION

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GOALS OF THE MENOMINEE NATION

INTRODUCTION

The analysis of any perceived need, for individuals, groups, or nations, requires that a context be provided. Any need or goal tends to be one of many. Relative to others, it may be more or less important either in the way it reflects core values or in its salience for solving immediate problems. Sometimes goals are mutually reinforcing; sometimes they are in conflict. The likelihood of any response to needs will depend upon the degree to which solutions to any one problem affect solutions to others. No goal, need, or value should be analyzed in isolation.

We, for this reason, explored the salience of transportation goals relative to other tribal goals. To do this we made a deliberate search to identify the major goals of the tribe, irrespective of their focus on transportation. This was done in two ways. First, we facilitated a group process session with the Transportation Study Advisory Committee, which consisted of tribal officials thought by the tribal leadership to have an interest in transportation. This may have produced a bias toward a greater focus on transportation issues than would have been the case for a more random selection of leaders or for the same people under different auspices. They were asked to set aside specific transportation concerns for this session to partly offset that bias potential. Second, we conducted interviews with a selection of people responsible for programs in the tribe (e.g. social services, health center, etc.) which we felt would have special needs or insights with respect to transportation issues. Again, they were asked to identify the most important goals and concerns for the tribe, irrespective of transportation content.

In each instance we listed the goals or concerns expressed by the people and elicited sufficient explanation to satisfy ourselves that we understood the concern. At least as well as the respondents were willing and able to articulate it. We made no effort to have the respondents set priorities, although we were careful to note signs of agreement in group situations and spontaneous expressions of priority. Nor did we challenge them with respect to appropriateness or potential

conflicts with other goals. Our main concern was to document a range of concerns.

In each of these sessions, respondents were asked to provide descriptive and evaluative information on the current activities associated with each goal. That information is not analyzed here, but is incorporated into subsequent sections of this report.

The concerns identified in these meetings and interviews were recast, if not so framed originally, as goal statements and combined into a single list. Duplicate entries were combined into single statements. Compound entries were separated into discrete components. The list was then content analyzed by inspection and goals were classified and grouped and ordered. The goals in each classification were grouped and the most salient listed first, with salience being judged by frequency of expression, expression by a wider range of types of groups, and intensity of expression. Once entered into a single category, no goal was repeated in another, although some would fit logically in more than one. Hence, as one reads down the list of goals, the categories tend to become more residual.

GOAL DISCUSSION

The classification and the discrete goals are presented in Exhibit 1, where the goals as expressed by the tribal members are lettered entries and the categories constructed by the consultant team are numbered entries shown as major headings. Most of the entries are self explanatory and require only brief comment.

1) Reduce unemployment and increase economic activity. A recent study of the economic problems of the reservation highlighted two major problems on the reservation: an unemployment rate of many times that of the nation and region, and a large net outflow of cash from the reservation. The tribe is not developed sufficiently in economic terms to even remotely approach self-sufficiency or to take advantage of multiplier effects from expenditures by tribal members for internal development. These concerns are reflected in the urgent need expressed by our respondents for programs to reduce unemployment

and increase opportunities for citizens to make a living on the reservation. The sawmill provides the most important resource in this regard. Skilled tradesmen were lacking and were seen as in important need. Some of these could be used to help alleviate a critical housing shortage that might allow many people now living in Shawano to return to the reservation. The proposal for an automobile repair service reflected the generally deteriorated state of the private cars on the reservation, which interred with transportation to work and recreation, and a perceived opportunity for a reservation-based business that would help stem the flow of money off the reservation.

2) Increase Community Solidarity. The rapid modernization of the tribe, the trauma of termination and the fight for restoration, and the thin settlement of a large area combine to make it difficult to maintain a sense of identity and unity (at least to a standard thought desirable by the tribal members). The tribe and the reservation are not simply an economic community, but a source of ethnic and spiritual identity. The urge is not to join the mainstream of European colonial life, but to remain Menominee while improving the standard of living. This is expressed in the goals of increasing community participation in the whole of tribal life. Improved communications would help this solidarity as well as providing a means of addressing specific emergent problems. Associated goals are providing a means for bringing the scattered teenage population together for recreation, providing common eating facilities around major work locations on the reservation, and providing communal transportation to intertribal powwows and other events. While transportation is an element in many of these goals, it is not the end, but the means for bringing people together to create and solidify a sense of unity and purpose.

3. Improve Health and Medical Services. The Menominees have the first tribally owned and operated medical clinic. A number of goals were expressed, primarily by people active in the provision of health services, which address technical problems experienced in the provision of services. They perceive a "misuse" of the ambulance by people who "use it as a taxi service" when alternatives are available. They see a need for people to rely more on themselves or on friends

and relatives for non-emergency transportation to the clinic. They also feel restricted by having only one ambulance which is limited to short trips to the Shawano hospital. Major problems are treated in Green Bay, but the ambulance cannot be taken that far without leaving the reservation uncovered for extended periods. They propose a second ambulance would allow them to transport directly to Green Bay and suggest that it would be used for the area outside the reservation and generate third party (insurance) payments. The need for detoxification services is seen as exceeding the capacity or willingness of the detoxification center to handle such problems, resulting in a proposal to ease restrictions on admission to the center. Another problem is the decline in the number of volunteers available to transport social service clients as a result of rising gasoline prices. Staff cars have been pressed into service to meet this need, reducing the availability of staff to meet the problems for which they are trained.

4. Improve transportation. A number of goals were expressed that seemed to treat transportation as an end in itself and addressed the needs of different groups. A need was seen to improve the means of moving people in and out of major focal points on the reservation such as the tribal headquarters, the sawmill, schools, clinics, day care centers and county offices. School children engaged in extra-curricular activities had no transportation to their homes and had to hitch-hike from the population centers where the late bus dropped them. The need for transportation to church on Sunday was expressed by several, but with little sense of urgency. An important concern was with the consolidation and coordination of existing transportation. Several offices and agencies have buses or cars or vans that are not fully utilized. The potential is seen to provide a much more comprehensive transit system with existing resources. Car pooling was suggested several times as a means of offsetting gas prices and coordinating travel, especially to Green Bay and other off-reservation sites. Insurance restrictions on tribal vehicles were seen as an obstacle to collective travel off reservation. The elderly, who shop for food monthly when their checks arrive, find the bus not adequate

to carry them and their purchases on those trips.

This is a long list of goals that is almost certainly not exhaustive. In addition to its elaboration, it needs inspection with reference to internal consistency and comparability. Accordingly, a simple cross tabulation of discrete goals was made, noting for each pair the degree which they are mutually reinforcing, conflicting or independent. This is shown in Exhibit 2. A "+" means that the goals are mutually enhancing. Pursuit of one can increase the salience of the other. An "o" indicates a pair of independent goals; one has no implications for the other. A "-" indicates a pair of goals in conflict; the more you enhance the one, the more you damage the other. An "o" or "+" indicates either a slight tendency or potential for mutual enhancement or conflict or a situation in which special instances of specification are seen as having this tendency. The reader is cautioned that the assignment of places in Exhibit 2 is judgemental and not the result of detailed analysis.

As can be seen by inspection, it is our judgement that most of the goals expressed by the Menominee are either mutually enhancing or independent. Except for the health area, where goals were more specific and discrete, the mutual enhancement was found mostly within classifications, increasing our confidence in the scheme. Only three instances of conflict were noted.

There may be a conflict between reducing unemployment and increasing the number of volunteers to drive social service clients if people would otherwise be paid to perform this task. As such is not now the case, and the use of staff cars reduces the effectiveness of the social services, this conflict seems of little importance.

Providing ways of offsetting gas prices and encouraging transportation pools seemed to be potentially in conflict with two goals in the transportation classification: Providing transportation home after extra-curricular activities and providing transportation to church on Sunday. In this instance the assigned conflict reflects that fact that the proposers specifically wanted bus transportation. As this is not the only option, this conflict remains a special case potential and is not inherent in the generic goal.

In sum, the Menominee leadership has proposed a set of goals that not only address a wide range of concerns, but they do it with remarkable internal consistency. Their list meets the criteria for being a serious basis for planning.

SUMMARY

The current picture is one of a tribe that has an intact reservation on land that historically has always been theirs. They have a high level of cohesiveness as a result of their recent battles with the U. S. government. They have one of the best managed forestry operations in the U. S. They do not face the problem of immediate survival as a people as do the Oneida. Instead, the major problems are economic. The tribe has high unemployment, an inadequate supply of housing, and a cash flow off the reservation that hinders self-sufficiency and economic development. Hence, transportation development which helps conserve tribal funds will fit the Menominee goals.

EXHIBIT 1
MENOMINEE NATION GOALS

1. REDUCE UNEMPLOYMENT/INCREASE ECONOMIC ACTIVITY
 - A. Reduce unemployment
 - B. Increase business opportunities
 - C. Increase Trade Skills (especially need plumber, electrician)
 - D. Provide auto repair service on reservation
 - E. Get second ambulance to generate third party payments from off reservation
 - F. Relieve housing shortage on reservation
2. INCREASE COMMUNITY SOLIDARITY
 - A. Increase community participation
 - B. Improve communications system
 - C. Bring teenagers together
 - D. Create Tribal cafeteria(s)
 - E. Provide transportation to "doings" off reservation
3. IMPROVE HEALTH AND MEDICAL SERVICES
 - A. Reduce misuse of ambulance services (N.B. definition of "misuse" is from provider side only; may be good use from consumer perspective)
 - B. Get second ambulance to allow for long trips
 - C. Ease restrictions on inpatient admissions for alcoholics, drug addicts, etc. at detoxification center
 - D. Eliminate need for staff cars to transport social service clients; increase number of volunteers (N.B. number of volunteers has fallen because of rising gas prices)
4. IMPROVE TRANSPORTATION
 - A. Improve adequacy of transportation (focal points: headquarters, schools, clinic, day care centers, sawmill, county offices)
 - B. Consolidate and coordinate existing transportation
 - C. Provide ways to offset gas prices (transportation pools to work; getting cars started in winter)
 - D. Provide transportation home late after school (N.B. Problem of kids hitchhiking; no transportation provided to games, although there is transportation to practices)
 - E. Provide transportation to church on Sunday
 - F. Remove insurance restrictions on off-reservation travel (tribal vehicles now limited to 50 mile radius)
 - G. Improve coordination of trips (e.g. to Green Bay, Shawano, Health clinic, etc.)
 - H. Find collective way for elderly to shop (bus is okay to get to store on monthly trips, but too small to hold purchases) (possibly could use a trailer)



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